

## REMARKS

### Introductory Comments

As of the mailing date of the 04/19/2010 Office Action, claims 16 and 35-45 were pending in the present application. In the present amendment, claims 16, 40, and 45 have been amended, leaving claims 16 and 35-45 for consideration upon entry of the present Amendment. The claims have been amended as explained below. Reconsideration and allowance of the claims is respectfully requested in view of the foregoing amendments and the following remarks.

### Allowable Subject Matter

Applicants thank the Examiner for the statements that claims 41 and 42 are allowed and that claim 40 would be allowable if rewritten in independent form. 04/19/2010 Office Action, page 7, last full paragraph, and page 8, first full paragraph.

### Claim Amendments

Claim 16 has been amended to characterize the step (a) components as consisting of those recited, to recite an "aqueous starch solution" in step (a) (with support at the top of page 7 of the application as filed), to recite an optional surfactant component in step (a) (with support in the first full paragraph of page 9 of the application as filed), and to delete a first starch component Markush group that was not present in claim 16 as filed.

Claim 40 has been rewritten in independent form to incorporate the limitations of base claim 16 as presented in Applicants' 03/31/2010 Amendment.

Claim 45 has been amended for consistency with amended base claim 16.

Applicants are not conceding in this application that the amended claims would not have been patentable without the current amendments. The present claim amendments are intended only to facilitate expeditious allowance of valuable subject matter. Applicants respectfully reserve the right to present and prosecute the original versions of amended claims in one or more continuing applications.

Obviousness Rejections over Hallstrom + Maher

Claims 16, 37, 43, and 45 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Hallstrom (US 6165259) in view of Maher (US 4769081). 04/19/2010 Office Action, page 2, fourth paragraph. Applicants respectfully traverse this rejection to the extent it may be applicable to the claims as currently amended.

U.S. Patent No. 6,165,259 to Hallstrom et al. (hereinafter “Hallstrom”) generally describes an aqueous dispersion containing a dispersant and a disperse phase containing a hydrophobic material, the dispersant comprising an anionic compound having a specified molecular weight and structure type, and a cationic organic compound having a molecular weight less than 50,000. Hallstrom abstract. Hallstrom thus requires a cationic organic compound as part of his dispersant. Hallstrom’s hydrophobic materials include alkenyl succinic anhydrides. Hallstrom, column 2, line 49 to column 3, line 4.

U.S. Patent No. 4,769,081 to Maher (hereinafter “Maher”) generally describes enhancement of the rate and ease of water dispersibility and/or water solubility of powdered or granular starch materials by the incorporation therein of a glycoside surfactant ingredient. Maher abstract.

Applicants respectfully assert that claims 16, 37, 43, and 45 are patentable over Hallstrom and Maher because the cited references do not teach or suggest Applicants’ claim 16 emulsifying step in which the emulsified components exclude Hallstrom’s required cationic organic compound.

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a *prima facie* case of obviousness. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). Establishing a *prima facie* case of obviousness requires that all limitations of the claim be taught or suggested by the prior art. *See, e.g., CFMT, Inc. v. Yieldup Intern. Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003); *In re Royka*, 490 F.2d 981, 985 (C.C.P.A. 1974).

Applicants’ claim 16 as currently amended requires an emulsifying step (“step (a)”) in which the components emulsified consist of (1) alkenylsuccinic anhydride, (2) a

first starch component that is an aqueous starch solution consisting of water and a starch selected from the group consisting of non-ionic starches, anionic starches, and mixtures thereof, and (3) optionally, a surfactant component consisting of a surfactant selected from the group consisting of anionic surfactants and nonionic surfactants. The language of claim 16 makes clear that any unrecited components are excluded from step (a). Hallstrom requires a cationic organic compound as part of the dispersant that is used to form an aqueous dispersion with a hydrophobic component that can be, among others, an alkenyl succinic anhydride. Hallstrom abstract; column 1, lines 53-67; and column 2, line 49 to column 3, line 4. Hallstrom's cationic organic compound is not within the scope of any of Applicants' claim 16, step (a) components. Accordingly, Hallstrom alone does not teach or suggest an emulsifying step that excludes his required cationic organic compound. Adding Maher does not cure the deficiency of Hallstrom, because Maher does not provide any reason – let alone a plausible reason – for a skilled person to have modified Hallstrom's dispersion forming method to omit Hallstrom's required cationic organic compound. Accordingly, the combination of Hallstrom and Maher does not support a *prima facie* case of obviousness against claim 16, and claim 16 is patentable over Hallstrom and Maher. Claims 37, 43, and 45, which each depend directly from and further limit claim 16, are also patentable over Hallstrom and Maher.

Applicants therefore respectfully request the reconsideration and withdrawal of the rejection of claims 16, 37, 43, and 45 under 35 U.S.C. § 103(a) over Hallstrom and Maher.

#### Obviousness Rejections Citing Rasheed

Claims 16, 37, and 43-45 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Rasheed et al (US 2005/0124704) in view of Pardikes (US 5653915). 04/19/2010 Office Action, page 4, last full paragraph.

Claims 35-37 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Hallstrom (US 6165259) in view of Rasheed et al (US 2005/0124704). 04/19/2010 Office Action, page 6, first full paragraph.

Applicants respectfully traverse these rejections because Rasheed is not available as a reference against the present claims. The earliest possible effective date of Rasheed is its 03/04/2003 PCT filing date. However, as detailed in the Appendix, the present claims are fully supported by U.S. Provisional Application Serial No. 60/434,213, filed 12/17/2002, to which priority is claimed. So, Rasheed is not available as a reference against the present claims.

Applicants therefore respectfully request the reconsideration and withdrawal of the rejection of claims 16, 37, and 43-45 under 35 U.S.C. § 103(a) over Rasheed in view of Pardikes, and the rejection of claims 35-37 under 35 U.S.C. § 103(a) over Hallstrom in view of Rasheed.

#### Obviousness Rejections over Hallstrom + Tsai

Claims 38 and 39 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Hallstrom in view of Tsai et al. (US 5595631). 04/19/2010 Office Action, page 6, last full paragraph. Applicants respectfully traverse this rejection to the extent it may be applicable to the claims as currently amended.

Hallstrom is described above.

U.S. Patent No. 5,595,631 to Tsai et al. (hereinafter “Tsai”) generally describes a method of sizing paper products using a size composition comprising an aqueous dispersion of a) a cyclic dicarboxylic acid anhydride containing hydrophobic substitution, and b) cationic, non-degraded starch further modified in a specified manner. Tsai abstract.

Applicants respectfully assert that claims 38 and 39 are patentable over Hallstrom and Tsai because the cited references do not teach or suggest Applicants’ claim 16 emulsifying step in which the emulsified components exclude Hallstrom’s required cationic organic compound.

Claims 38 and 39 each depend directly from claim 16. As described above in the context of the obviousness rejection over Hallstrom and Maher, claim 16 as currently

amended requires an emulsifying step that excludes Hallstrom's required cationic organic compound. Accordingly, Hallstrom alone does not support a *prima facie* case of obviousness against claims 38 and 39. Adding Tsai does not cure the deficiency of Hallstrom, because Tsai does not provide any reason – let alone a plausible reason – for a skilled person to have modified Hallstrom's dispersion forming method to omit Hallstrom's required cationic organic compound. Accordingly, the combination of Hallstrom and Tsai does not support a *prima facie* case of obviousness against claims 38 and 39, and claims 38 and 39 are patentable over Hallstrom and Tsai.

Applicants therefore respectfully request the reconsideration and withdrawal of the rejection of claims 38 and 39 under 35 U.S.C. § 103(a) over Hallstrom and Tsai.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance is respectfully requested.

It is believed that all the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130 maintained by Applicants' Attorneys.

Respectfully submitted,

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**Appendix:** Support for the Present Claims in Applicants' 12/17/2002 Provisional Application (USSN 60/434,213)

Claim Limitation	Support in USSN 60/434,213
16. (currently amended) A process for making a sizing composition comprising the sequential steps of: (a) emulsifying components consisting of alkenylsuccinic anhydride,	Claim 16
an aqueous starch solution consisting of water and a first starch component consisting of starch selected from the group consisting of non-ionic starches, anionic starches, and mixtures thereof, and	Claim 16; page 7, line 27
optionally, a surfactant component consisting of a surfactant selected from the group consisting of anionic surfactants and nonionic surfactants	Page 10, lines 15-20
to form an emulsion consisting of the alkenylsuccinic anhydride, the aqueous starch solution, and, optionally, the surfactant component; and	Claim 16; page 7, line 27; page 10, lines 15-20
(b) combining the emulsion with a second starch component selected from the group consisting of non-ionic starches, ionic starches, and mixtures thereof, and thereby forming a sizing composition; wherein the alkenylsuccinic anhydride and the starch in the emulsion and the second starch component are present at a starch:alkenylsuccinic anhydride weight ratio that is sufficiently high to enable the sizing composition to impart useful sizing properties to a fibrous substrate when the sizing composition contacts the-fibrous substrate; and	Claim 16
wherein the starch component of the starch:alkenylsuccinic anhydride weight ratio is the total weight of the first starch component and the second starch component.	Page 4, line 32 to page 5, line 5
35. (previously presented) The method of claim 16, wherein the first starch component contains starch consisting of the product of modifying a corn starch, potato starch, wheat starch, tapioca starch, or sorghum starch by oxidation.	Page 7, lines 17-22
36. (previously presented) The method of claim 16, wherein the first starch component contains starch consisting of the product of modifying a corn starch, potato starch, wheat starch, tapioca starch, or sorghum starch by acid modification.	Page 7, lines 17-22
37. (previously presented) The method of claim 16, wherein the first starch component contains starch consisting of the product of modifying a corn starch, potato starch, wheat starch, tapioca starch, or sorghum starch by heat treatment.	Page 7, lines 17-22

Claim Limitation	Support in USSN 60/434,213
38. (previously presented) The method of claim 16, wherein the first starch component contains starch consisting of the product of modifying a corn starch, potato starch, wheat starch, tapioca starch, or sorghum starch by acetylation.	Page 7, lines 17-22
39. (previously presented) The method of claim 16, wherein the first starch component contains starch consisting of the product of modifying a corn starch, potato starch, wheat starch, tapioca starch, or sorghum starch by hydroxyethylation.	Page 7, lines 17-22
40. (currently amended) A process for making a sizing composition comprising the sequential steps of: (a) emulsifying alkenylsuccinic anhydride with a first starch component containing starch selected from the group consisting of non-ionic starches, anionic starches, and mixtures thereof, and thereby forming an emulsion consisting of the alkenylsuccinic anhydride and the first starch component;	Claim 16
wherein the first starch component contains starch consisting of the product of modifying a corn starch, potato starch, wheat starch, tapioca starch, or sorghum starch by a process selected from oxidation, acid modification, heat treatment, acetylation, and hydroxyethylation; and wherein the first starch component contains a nonionic oxidized starch; and	Page 7, lines 17-22
(b) combining the emulsion with a second starch component selected from the group consisting of non-ionic starches, ionic starches, and mixtures thereof, and thereby forming a sizing composition; wherein the alkenylsuccinic anhydride and the starch in the emulsion and the second starch component are present at a starch:alkenylsuccinic anhydride weight ratio that is sufficiently high to enable the sizing composition to impart useful sizing properties to a fibrous substrate when the sizing composition contacts the fibrous substrate; and	Claim 16
wherein the starch component of the starch:alkenylsuccinic anhydride weight ratio is the total weight of the first starch component and the second starch component.	Page 4, line 32 to page 5, line 5
41. (previously presented) A process for making a sizing composition comprising the sequential steps of: (a) emulsifying alkenylsuccinic anhydride with a first starch component containing starch selected from the group consisting of non-ionic starches, anionic starches, and mixtures thereof, and thereby forming an emulsion;	Claim 16



Claim Limitation	Support in USSN 60/434,213
wherein the first starch component contains starch consisting of the product of modifying a corn starch, potato starch, wheat starch, tapioca starch, or sorghum starch by a process selected from oxidation, acid modification, heat treatment, acetylation, and hydroxyethylation;	Page 7, lines 17-22
wherein said emulsifying alkenylsuccinic anhydride with a first starch component is conducted using an emulsification device characterized by an inlet temperature of about 120 to 150°F and an inlet pressure of about 10 psig; and	Page 10, lines 3-14
(b) combining the emulsion with a second starch component selected from the group consisting of non-ionic starches, ionic starches, and mixtures thereof, and thereby forming a sizing composition; wherein the alkenylsuccinic anhydride and the starch in the emulsion and the second starch component are present at a starch:alkenylsuccinic anhydride weight ratio that is sufficiently high to enable the sizing composition to impart useful sizing properties to a fibrous substrate when the sizing composition contacts the-fibrous substrate; and	Claim 16
wherein the starch component of the starch:alkenylsuccinic anhydride weight ratio is the total weight of the first starch component and the second starch component.	Page 4, line 32 to page 5, line 5
42. (previously presented) A process for making a sizing composition comprising the sequential steps of: (a) emulsifying alkenylsuccinic anhydride with a first starch component containing starch selected from the group consisting of non-ionic starches, anionic starches, and mixtures thereof, and thereby forming an emulsion;	Claim 16
wherein the first starch component contains starch consisting of the product of modifying a corn starch, potato starch, wheat starch, tapioca starch, or sorghum starch by a process selected from oxidation, acid modification, heat treatment, acetylation, and hydroxyethylation;	Page 7, lines 17-22
wherein said emulsifying alkenylsuccinic anhydride with a first starch component is conducted using an emulsification device characterized by an outlet temperature of about 130 to 160°F and an outlet pressure of about 150 to about 160 psig; and	Page 10, lines 3-14

Claim Limitation	Support in USSN 60/434,213
<p>(b) combining the emulsion with a second starch component selected from the group consisting of non-ionic starches, ionic starches, and mixtures thereof, and thereby forming a sizing composition;</p> <p>wherein the alkenylsuccinic anhydride and the starch in the emulsion and the second starch component are present at a starch:alkenylsuccinic anhydride weight ratio that is sufficiently high to enable the sizing composition to impart useful sizing properties to a fibrous substrate when the sizing composition contacts the-fibrous substrate; and</p>	<p>Claim 16</p>
<p>wherein the starch component of the starch:alkenylsuccinic anhydride weight ratio is the total weight of the first starch component and the second starch component.</p>	<p>Page 4, line 32 to page 5, line 5</p>
<p>43. (previously presented) The method of claim 16, wherein the weight ratio of the first starch component starch to the alkenylsuccinic anhydride is about 0.2:1 to about 20:1.</p>	<p>Page 8, lines 18-20</p>
<p>44. (previously presented) The method of claim 16, wherein the weight ratio of the total weight of the first starch component starch and the second starch component starch to alkenylsuccinic anhydride is about 10:1 to about 200:1.</p>	<p>Page 12, lines 19-21; page 4, line 32 to page 5, line 5</p>
<p>45. (currently amended) The method of claim 16, wherein the aqueous starch solution has a starch solids content of about 1 to about 20 weight percent, based on the total weight of the aqueous starch solution.</p>	<p>Page 7, line 27 to page 8, line 3</p>